

**PERMIT APPLICATION REPORT FOR
FOUR 10.5MW SIMPLE CYCLE TURBINES AT
DREWS SUBSTATION**

PREPARED FOR:

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13934 Eberle Road
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FOR SUBMITTAL TO:

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PREPARED BY:

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TABLE OF CONTENTS

SECTION	PAGE
1.0 INTRODUCTION.....	1
1.1 General Introduction	1
1.2 Project Summary.....	1
1.3 Technical Project Contacts	2
2.0 FACILITY AND EQUIPMENT INFORMATION	3
2.1 Facility Description.....	3
2.2 Equipment Description	3
3.0 EMISSIONS INFORMATION.....	5
3.1 Criteria Pollutant Emissions Summary	5
3.2 Toxic Pollutant Emissions Summary.....	5
4.0 AIR QUALITY IMPACT ANALYSIS AND SCREENING RISK ASSESSMENT.....	9
4.1 Ambient Air Quality Impact Analysis	9
4.2 Screening Risk Assessment	9
5.0 REGULATORY INFORMATION.....	13
5.1 SCAQMD Regulatory Analysis.....	13
6.0 PROPOSED PERMIT LANGUAGE	16
6.1 Proposed Permit Conditions	16

LIST OF APPENDICIES

APPENDIX A	SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT APPLICATION FOR PERMIT TO CONSTRUCT FORMS (COPIES)
APPENDIX B	FACILITY LOCATION MAPS AND DIAGRAMS
APPENDIX C	EQUIPMENT INFORMATION
APPENDIX D	CRITERIA AND TOXIC POLLUTANT EMISSIONS INFORMATION
APPENDIX E	AMBIENT AIR QUALITY IMPACT ANALYSIS AND SCREENING RISK ASSESSMENT INFORMATION

SECTION 1.0

INTRODUCTION

1.1 General Introduction

Alliance Colton LLC (Alliance) is submitting permit applications to construct and operate four simple cycle 10.5 MW turbines. The proposed facility is located at 559 S. Pepper Ave in the City of Colton. Construction of the project is to begin as soon as possible in order for the turbines to be operational by July 1, 2001. Alliance requests, therefore, that SCAQMD take steps to expedite processing of the applications. The permit applications have been prepared with assistance from SCEC and are being submitted in conjunction with applications to the California Energy Commission (CEC) under the 21-day emergency siting process.

1.2 Project Summary

The Drews substation project is one of two projects proposed by Alliance in the City of Colton. The properties are owned by the City of Colton and will be leased to Alliance for the purpose of generating electricity. Alliance will be generating power under agreement with the California Independent System Operator (ISO). ISO and the California Energy Commission have determined that the region surrounding Colton will be vulnerable to power interruptions because the infrastructure to transport electricity from outside the region is not adequate to meet local power demands. Local generation capability in the region is, therefore, required to serve local electricity users. The proposed facilities are critical to power availability in the region both in terms of the amount of electricity generated and in the ability to distribute power to the local population.

The proposed facility will be constructed and operated in two phases. The first phase will commence on July 1, 2001. During the first phase, Alliance proposes to operate the turbines with dry low-emission combustion technology capable of meeting NO_x levels of 25 PPMV. CO emissions will be limited to 20 ppmv. The facility will qualify as a RECLAIM NO_x facility, but not a Title V facility. Alliance will install RECLAIM-compliant CEMs or parametric monitoring systems to quantify and report mass NO_x emission rates. Until such installations are complete, the units will be subject to RECLAIM protocol for process units

The second phase will commence upon installation of Catalytica Combustion Systems (Catalytica) Xonon technology or an alternative technology deemed to meet BACT for prime power units. Catalytica has committed to provide Alliance with its final delivery schedule of retrofit packages for the turbines by September 30, 2001. Catalytica, General Electric and Alliance anticipate being able to begin installing Xonon in July of 2002, with final installation to be complete by February 1, 2003. The ISO – Alliance contract allows Alliance to install during the summer of 2002, if the retrofit systems are available for installation prior to November of 2002. If Catalytica cannot commit to install Xonon within a reasonable period, Alliance will

proceed to purchase and install selective catalytic reduction and CO oxidation systems to meet BACT under phase two of the project.

During phase two of the project, potential operations will increase only to the point that the facility will remain a minor source, with respect to Title V, and to the point that emission offsets for pollutants other than NO_x can be avoided. Catalytica, General Electric and Alliance anticipate that Xonon will meet NO_x levels of approximately 5 ppmv and CO emissions of 10 ppmv. General Electric has not provided emission rate guarantees for PM₁₀. EPA AP-42 emission factors for PM₁₀ indicate maximum annual operations of 2,500 hours before the facility's annual potential emissions would reach four tons. These factors, however, reflect the use of water / steam injection, rather than dry combustion technology and likely overstate potential emissions from the facility. Final permitted annual operating hours will be determined based upon initial source tests to determine actual PM₁₀ emission rates.

1.3 Technical Project Contacts

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SECTION 2.0

FACILITY AND EQUIPMENT INFORMATION

2.1 Facility Description

The Drews Substation is owned and operated by the publicly owned City of Colton utility. The city is leasing the property to Alliance, specifically for the purpose of generating power. On February 5, 2001, the City issued its finding that the proposed project is a tenant improvement and has deemed that a CEQA negative declaration is not required. The facility is located in an area of the City of Colton that is characterized by light industrial and rural land uses. Because applications are being submitted with CEC, the CEC environmental impact assessment will serve as a substitute for the CEQA process. Appendix B contains facility maps, plot plans and the City's CEQA determination.

Alliance Colton LLC
Drews Substation
559 South Pepper Avenue
Colton, California

2.2 Equipment Description

Alliance is proposing to construct four General Electric Model 10B1 gas turbines, rated at 10.5 MW. Table 2-1 contains specifications for the units. Additional equipment information is contained in Appendix C.

Table 2-1
Equipment Summary
10.5 MW Gas Turbine
Drews Substation

Specification	Description
Manufacturer:	General Electric
Model:	10B1
Rating:	10.5 MW
Fuel :	Pipeline Natural Gas
Fuel Consumption:	123,000 cf/hr
Exhaust Flow:	72,904 DSCFM, 199,537 ACFM
Stack Height:	45 ft.
Stack Diameter:	9 ft. x 7 ft.

SECTION 3.0

EMISSIONS INFORMATION

3.1 Criteria Pollutant Emissions Summary

Phase 1 estimated criteria pollutant emissions are summarized in Table 3-1 for each unit, and Table 3-2 for the entire facility. Phase 1 NO_x and CO emission factors were provided by General Electric and reflect anticipated achievable emission rates using dry combustion technology. ROG, PM₁₀, and SO_x emission factors were derived from EPA AP-42, dated April 2000. A maximum operating schedule of 24 hours per day, 30 days per month, and 525 hours per year at 100% rated capacity was used for all maximum calculations. Average operations reflect 5 hours per day, 20 days per month, and 423 hours per year. Additional emissions information for Phase 1 is included in Appendix D.

Total potential Daily NO_x emissions for the Facility are 283 pounds and total potential annual emissions for the facility are 9.9 tons. Potential NO_x emissions indicate that the Facility will be classified as a RECLAIM facility, but not as a Title V facility during Phase 1 of the project.

Phase 2 estimated criteria pollutant emissions are summarized in Table 3-3 for each unit, and Table 3-4 for the entire facility. Phase 2 NO_x and CO emission factors were provided by General Electric and reflect anticipated achievable emission rates using Xonon combustion technology. ROG, PM₁₀, and SO_x emission factors were derived from EPA AP-42, dated April 2000. A maximum operating schedule of 24 hours per day, 30 days per month, and approximately 2,500 to 3,900 hours per year at 100% rated capacity was used for all maximum calculations. Annual operating hours are dependent upon PM₁₀ emission factors and will be specified upon initial sources tests. Projected Xonon emission rates, AP-42 emission rates and emission calculation spreadsheets for Phase 2 of the project are included in Appendix D.

3.2 Toxic Pollutant Emissions Summary

Toxic pollutant emissions from the proposed project were derived from factors provided by SCAQMD for natural gas fired combustion turbines. Table 3-5 provides a summary of the factors and emission estimates. Additional toxic emissions information can be found in Appendix D.

Table 3-1
Phase 1
Criteria Pollutant Emissions Summary
One Gas Turbine
Drews Substation

	U-EF lb./MMBtu	C-EF lb./MMBtu	AHU lbs./hr	AHC Lbs./hr	MHU lbs./hr	MHC lbs./hr	MDU lbs./day	MDC lbs./day	AA Lbs./yr.	APTE tons/yr.	30DA lbs./day
ROG	0.0030	0.0030	0.33	0.33	0.35	0.35	8.4	8.4	140	0.07	8.4
UNROG	0.0089	0.0089	0.98	0.98	1.04	1.04	0.0	24.8	416	0.22	24.8
SO_x	0.0034	0.0034	0.38	0.38	0.40	0.40	9.5	9.5	159	0.08	9.5
CO	0.0495	0.0495	5.47	5.47	5.76	5.76	138.2	138.2	2313	1.22	138.2
PM₁₀	0.0066	0.0066	0.73	0.73	0.77	0.77	18.4	18.4	308	0.16	18.4
NO_x	0.1016	0.1016	11.22	11.22	11.81	11.81	283.5	283.5	4747	2.50	283.5

Table 3-2
Phase 1
Criteria Pollutant Emissions Summary
Entire Facility
Drews Substation

	U-EF lb./MMBtu	C-EF lb./MMBtu	AHU lbs./hr	AHC Lbs./hr	MHU lbs./hr	MHC lbs./hr	MDU lbs./day	MDC lbs./day	AA Lbs./yr.	APTE tons/yr.	30DA lbs./day
ROG	0.0030	0.0030	1.33	1.33	1.40	1.40	33.5	33.5	561	0.30	33.5
UNROG	0.0089	0.0089	3.93	3.93	4.14	4.14	0.0	99.4	1664	0.88	99.4
SO_x	0.0034	0.0034	1.50	1.50	1.58	1.58	38.0	38.0	636	0.33	38.0
CO	0.0495	0.0495	21.88	21.88	23.03	23.03	552.7	552.7	9254	4.87	552.7
PM₁₀	0.0066	0.0066	2.92	2.92	3.07	3.07	73.7	73.7	1234	0.65	73.7
NO_x	0.1016	0.1016	44.89	44.89	47.25	47.25	1134.0	1134.0	18987	9.99	1134.0

Table 3-3
Phase 2
Criteria Pollutant Emissions Summary
One Gas Turbine
Drews Substation

	U-EF lb./MMBtu	C-EF lb./MMBtu	AHU lbs./hr	AHC Lbs./hr	MHU lbs./hr	MHC lbs./hr	MDU lbs./day	MDC lbs./day	AA Lbs./yr.	APTE tons/yr.	30DA lbs./day
ROG	0.0030	0.0030	0.3315	0.3315	0.3489	0.3489	8.4	8.4	592	0.31	8.4
UNROG	0.0089	0.0089	0.98	0.98	1.04	1.04	0.0	24.8	1755	0.92	24.8
SO_x	0.0034	0.0034	0.3756	0.3756	0.3954	0.3954	9.5	9.5	671	0.35	9.5
CO	0.0248	0.0248	2.7400	2.7400	2.8842	2.8842	69.2	69.2	4891	2.57	69.2
PM₁₀	0.0066	0.0066	0.7292	0.7292	0.7676	0.7676	18.4	18.4	1302	0.69	18.4
NO_x	0.0240	0.0240	2.6557	2.6557	2.796	2.796	67.1	67.1	4740	2.49	67.1

* Based upon annual operating limits to be determined after source tests are conducted.

Table 3-4
Phase 2
Criteria Pollutant Emissions Summary
Entire Facility
Drews Substation

	U-EF lb./MMBtu	C-EF lb./MMBtu	AHU lbs./hr	AHC lbs./hr	MHU lbs./hr	MHC lbs./hr	MDU lbs./day	MDC lbs./day	AA Lbs./yr.	APTE tons/yr.	30DA lbs./day
ROG	0.0030	0.0030	1.33	1.33	1.40	1.40	33.5	33.5	2367	1.25	33.5
UNROG	0.0089	0.0089	3.93	3.93	4.14	4.14	0.0	99.4	7021	3.70	99.4
SO_x	0.0034	0.0034	1.50	1.50	1.58	1.58	38.0	38.0	2682	1.41	38.0
CO	0.0248	0.0248	10.96	10.96	11.54	11.54	276.9	276.9	19564	10.30	276.9
PM₁₀	0.0066	0.0066	2.92	2.92	3.07	3.07	73.7	73.7	5206	2.74	73.7
NO_x	0.0240	0.0240	10.62	10.62	11.18	11.18	268.4	268.4	18962	9.98	268.4

* Based upon annual operating limits to be determined after source tests are conducted.

**Table 3-5
Toxic Pollutant Emissions Summary
Drews Substation**

Compound	Turbine Emission Factor		Turbine Emissions	
	(lb./MMcf)	(lb./hr)	(lb./yr.)	(tons/yr.)
Acetaldehyde	0.037	0.00410	35.90	0.01795
Acrolein	0.009	0.00100	8.73	0.00437
Benzene	0.011	0.00125	10.96	0.00548
Formaldehyde	0.094	0.01041	91.21	0.04560
PAH'S **	0.001	0.0001	0.97	0.00049
Toluene	0.073	0.00804	70.44	0.03522
Xylene	0.030	0.00330	28.91	0.01446

Notes:

1. Emission factors provided by SCAQMD.

SECTION 4.0

AIR QUALITY IMPACT ANALYSIS AND SCREENING RISK ASSESSMENT

4.1 Ambient Air Quality Impact Analysis

An ambient air quality impact analysis (AQIA) was conducted in accordance with SCAQMD Rule 1303. The purpose of the AQIA is to assist in determining if the proposed turbines will result in an unacceptable level of emission concentrations in the area surrounding the project site. NO₂ and CO are typically the pollutants of greatest concern for natural-gas combustion projects.

SCEC completed a mid-tier AQIA for the project using the ISCST3 computer model. The model was set up with flat terrain grid extending 5000 meters from the project site and operated with normalized emission rates of 1.0 gram per second. Actual meteorological data from the Redlands weather station was used and the model was executed using non-regulatory default options. In addition, no significant buildings were located on-site, so building induced down wash and wake effects were not factors.

The results of the air dispersion modeling indicate that impacts are within the SCAQMD significance levels for air quality impacts. The results of the AQIA are summarized below in Table 4-1 and 4-2. Table 4-1 provides the summary based upon 500 operating hours per year. Table 4-2 provides a summary based upon 8760 operating hours per year with additional NO_x and CO emission reductions. Additional modeling information can be found in Appendix E.

4.2 Screening Risk Assessment

A tier 3 screening risk assessment was conducted in accordance with SCAQMD 1401 to evaluate the project's potential cancer, chronic and acute health risks. The assessment included the use of ISCST3 to determine down-wind pollutant concentrations. These concentrations were then used with SCAQMD calculation methodologies to determine health risks.

The results of the screening risk assessment indicate that the proposed project meets the standards set forth in SCAQMD Rule 1401 for cancer, chronic, and acute health risks. The results of the assessment are summarized in Table 4-3. Additional risk assessment information can be found in Appendix E.

Table 4-1
Summary of Air Quality Impact Analysis
Phase 1 - 500 Operating Hours/Year
Drews Substation

Pollutant	Averaging Time	Emission Rate (lbs./hr)	Maximum Impact ($\mu\text{g}/\text{m}^3$)	SCAQMD / NSR
				Allowable Significant Change ($\mu\text{g}/\text{m}^3$)
NO _x	1 – Hour	11.8	7.2	20.0
NO _x	Annual (500 hours)	8.4	0.01	1.0
CO	1 – Hour	7.0	4.3	1100.0
CO	8 – Hour	7.0	2.8	500.0
PM	24 – Hour	0.8	0.1	2.5
PM ₁₀	Annual (500 hours)	0.8	0.001	1.0

Notes:

1. NO_x annual (500 hours) emission average reflects 25 ppmv and the 0.71 NO_x to NO₂ conversion factor.

Table 4-2
Summary of Air Quality Impact Analysis
Phase 2 - 8760 Operating Hours/Year
Drews Substation

Pollutant	Averaging Time	4 GTs Cumulative Emission Rate (lbs./hr)	4 GTs Cumulative Maximum Impact ($\mu\text{g}/\text{m}^3$)	SCAQMD / NSR Allowable Significant Change ($\mu\text{g}/\text{m}^3$)
NO _x	1 – Hour	2.4	1.47	20.0
NO _x	Annual (8760 hours)	1.7	0.13	1.0
CO	1 – Hour	7.0	4.3	1100.0
CO	8 – Hour	7.0	3.4	500.0
PM	24 – Hour	0.8	0.2	2.5
PM ₁₀	Annual (8760 hours)	0.8	0.06	1.0

Notes:

1. NO_x annual (8760 hours) emission average reflects 5 ppmv and the 0.71 NO_x to NO₂ conversion factor.

Table 4-3
Summary of Screening Risk Assessment
Drews Substation – 8760 Hours/Year

Compound	MICR Summary		HIC Summary		HIA Summary	
	Unit Risk Factor	MICR	REL Factor	HIC	REL Factor	HIA
Acetaldehyde	2.70E-06	8.27E-10	9.00E+00	0.00003	n/a	n/a
Acrolein	n/a	n/a	n/a	n/a	1.90E-02	0.03220
Benzene	2.90E-05	2.71E-09	6.00E+00	0.000016	1.30E+03	0.00000
Formaldehyde	6.00E-06	4.67E-09	3.00E+00	0.000259	9.40E-02	0.06798
PAH'S *	1.70E-03	1.79E-07	n/a	n/a	n/a	n/a
Toluene	n/a	n/a	3.00E+02	0.000002	3.70E+04	0.00000
Xylene	n/a	n/a	7.00E+02	0.000000	2.20E+04	0.00000
	Total MICR	1.87E-07	Total HIC	0.00031	Total HIA	0.10018

SECTION 5.0

REGULATORY INFORMATION

5.1 SCAQMD Regulatory Analysis

The following is a discussion of compliance issues and applicable SCAQMD Rules and Regulations.

Regulation II

Rule 212: Standards for Approving Permits:

This equipment is not located within 1000 feet of a school, but the proposed facility will have potential NO_x emissions during its first two years of operation that are in excess of the levels specified in Rule 212 (g). Alliance requests that any public notification regarding the proposed project be made as soon as possible to ensure swift permit processing.

Regulation IV

Rule 401: Visible Emissions:

The opacity limits established in Rule 401 are not expected to be exceeded since the equipment will be fired on natural gas. Compliance with Rule 401 is expected.

Rule 402: Nuisance:

Based upon experience with similar equipment, operation of this system is not expected to emit air contaminants so as to cause a nuisance. Compliance with Rule 402 is expected.

Rule 431.1 Sulfur Content of Gaseous Fuels:

The equipment proposed for this project will be fired on pipeline quality natural gas. Compliance with Rule 431.1 is expected.

Regulation IX

Subpart GG – Standards of Performance for Stationary Gas Turbines:

Based upon performance characteristics for the turbine model, the maximum NO_x concentration allowable under Subpart GG is 0.0235% of exhaust volume at 15% O₂. The turbines are expected to emit NO_x at a rate of less than 0.0025% of exhaust volume at 15% O₂. Compliance with Subpart GG is expected.

Regulation XI

Rule 1134: Emissions of Oxides of Nitrogen from Stationary Gas Turbines

New turbines and RECLAIM sources are exempt from Rule 1134.

Regulation XIII

Rule 1303 and Rule 2005: Best Available Control Technology (BACT):

Achieved in practice BACT for simple cycle prime power gas turbines generally consists of 5 ppmv for NO_x and 10 ppmv for CO. Catalytica Xonon is generally capable of meeting these BACT levels and will be available for installation prior to any operation of the turbines in the year 2003.

In the interim period, Alliance will operate the turbines with General Electric's dry combustion technology, capable of meeting 25 ppmv NO_x and 20 ppmv CO. At this time, these levels are generally considered to be the lowest achievable emission rates achievable without the use of add-on emission control systems. It should be noted that any add-on control systems that could normally be installed on the turbines, whether Xonon or SCR, cannot be delivered prior to the 2001 operating season.

SCAQMD BACT guidelines specify clean fuel policy as BACT for emergency turbines. The proposed phase one project will operate under severe permit restrictions, much in the same manner as an emergency turbine would. Unlike typical emergency turbines, however, operations under phase one of the project would be subject to a sunset date in the permit that would limit project duration. Sections A and C of SCAQMD BACT policy specify that SCAQMD can make less stringent BACT determinations based upon project operation hours and upon project duration. The proposed operating hour limits, the limited duration of Phase 1 of the project, and the environmental and social implications of power outages that can be prevented warrant an interim BACT determination that favors dry combustion technology with NO_x at 25 ppmv.

Rule 1303 and Rule 2005: Modeling:

Modeling as required by SCAQMD Rules 1303 and 2005 was performed to demonstrate no unacceptable increase in ambient NO₂, CO and PM emission concentrations. Detailed information regarding the modeling for this project can be found in Section 4.0 and Appendix E of this report.

Rule 1303 and Rule 2005: Emission Offsets:

The estimated maximum annual emissions from the proposed equipment, combined with limits upon annual operating hours will be below the emission offsets threshold stipulated in Rule 1303(b)(2). Offsets for CO, ROG, SO_x and PM₁₀ will not be required.

Total facility NO_x emissions are expected to exceed four tons per year. RECLAIM RTCs will be

secured for the first year of operations prior to start-up. Alliance also coordinate with CARB to obtain emission offset credits through the emergency offset bank and will supplement with credits obtained through the private market.

Regulation XIV

Rule 1401: New Source Review of Toxic Air Contaminants:

As required in SCAQMD Rule 1401, a Tier III Risk Assessment was performed to demonstrate compliance with Rule 1401(d). Detailed information regarding the risk assessment for this project can be found in Section 4.0 and Appendix E of this report.

SECTION 6.0

PROPOSED PERMIT LANGUAGE

6.1 Proposed Permit Conditions

1. On or before October 31, 2001, operator shall notify district of selected emission control technology capable of meeting BACT achieved in practice standards for prime power units. Operator shall also submit to the district an implementation plan and supporting documentation to demonstrate the viability of the selected technology.
2. Prior to the installation of emission control equipment, turbine operations will be subject to the following restrictions:
 - a. Operation of turbines at this facility shall not result in NO_x emission levels in excess of 10 tons per year, measured in accordance with RECLAIM protocol for process units using a concentration limit of 25 ppmv or through the use of a RECLAIM-compliant CEMs or parametric monitoring system.
 - b. Operation of this turbine without the installation of NO_x and CO emission reduction technology shall cease on February 1, 2003.
3. Once emission reduction technology is installed, turbine operations shall be subject to the following restrictions:
 - a. Operation of turbines at this facility shall not result in NO_x emission levels in excess of 10 tons per year, measured in accordance with RECLAIM protocol for process units using a concentration limit of 5 ppmv or through the use of a RECLAIM-compliant CEMs or parametric monitoring system.

APPENDIX A

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT PERMIT TO CONSTRUCT APPLICATION FORMS (COPIES)

- **(1) FORM XPP**
- **(4) FORM 400-A**
- **(4) FORM 400-E-12**
- **(1) FORM CEQA**

APPENDIX B

FACILITY LOCATION MAPS AND DIAGRAMS

APPENDIX C

EQUIPMENT INFORMATION

APPENDIX D

CRITERIA AND TOXIC POLLUTANT INFORMATION

APPENDIX E

AMBIENT AIR QUALITY IMPACT ANALYSIS AND SCREENING RISK ASSESSMENT INFORMATION